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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,123	01/14/2004	William A. Lenkner	13DV-14289 (07783-0168)	3822
31450	7590	04/05/2006	EXAMINER	
MCNEES WALLACE & NURICK LLC 100 PINE STREET P.O. BOX 1166 HARRISBURG, PA 17108-1166			LIN, JAMES	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/757,123

Applicant(s)

LENKNER ET AL.

Examiner

Jimmy Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) 3,4,7,8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/24/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

***Drawings***

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. Stowell et al. (US 5,851,679) discloses Fig. 1.

***Specification***

3. The disclosure is objected to because of the following informalities: In paragraph 2, line 5, the phrase "such a thermal barrier coating" sounds awkward. The phrase should read "such as a thermal barrier coating".
4. Paragraphs 15 and 17 refer to the line 2-2 in Fig. 1. Fig. 1 does not have a line 2-2, but does have a line 4-4.

Appropriate correction is required.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The thickness of 25 – 100 microns described in claim 13 refers to a single flake of the combined layers of high and low index of radiative reflectance material. However, the specification only describes the thickness of a layer

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that has been painted onto a substrate (paragraph 28, lines 8 – 10). The painted layer has multiple flakes of the combined layers of high and low index of radiative reflectance material and is not the same as a single flake. Therefore, the thickness described in the specification and the claims refer to different layers.

### ***Claim Objections***

6. Claims 3, 4, 7, and 8 are objected to because of the following informalities:

These claims appear to be Markush type claims. However, improper Markush language is used. The phrase "the group of" should read "the group consisting of". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 6 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 6 recites the limitation "the plurality of trays" in line 1. There is insufficient antecedent basis for this limitation in the claim. Claim 6 is a dependant of claim 1, which does not refer to a plurality of trays. For the purpose of this examination, claim 6 will be interpreted as dependant of claim 5.

10. The term "high temperature" in claim 9 is a relative term which renders the claim indefinite. The term "high temperature" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary

skill in the art would not be reasonably apprised of the scope of the invention. The specification notes that high temperature metals are metals having a high melting point, such as stainless steel. It is unclear as to what "high temperature" would be required for a metal to be considered as having a high melting point.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1 – 5, 7, 8, and 13 – 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Gray et al. (US 4,879,140).

13. Regarding claims 1, 3 and 4, Gray et al. teaches a method of depositing a SiO<sub>2</sub>/TiO<sub>2</sub> multilayer on the inside wall of a glass tube (column 4, lines 6 – 8). According to claims 3 and 4, SiO<sub>2</sub> is a material having a low index of radiative reflectance and TiO<sub>2</sub> is a material having a high index of radiative reflectance. Gray et al. also teaches that elevating the temperature of the film/tube combination increases tensile forces (column 6, lines 59 – 61). If the combination of intrinsic and thermal stresses in the film is tensile and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate (column 6, lines 33 – 37). The flakes of film material can then be swept through with nitrogen and collected by a downstream filter (column 4, lines 16 – 17).

14. Regarding claim 2, Gray et al. teaches that thermal stress occurs as the film temperature is changed from the deposition temperature and is the result of the usually different thermal expansion coefficients of the multilayered film materials and the substrate (column 6, lines 29 – 33). If the combination of intrinsic and thermal stresses in the film is tensile and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate.

15. Regarding claim 5, a tray is defined to be a shallow flat receptacle with a raised edge or rim. The specification states that a tray can be a single piece of construction, such as a spiral or any other geometric profile (paragraph 25, lines 6 – 7). From the definition of the specification, a tray can have a surface that may not necessarily be flat. For example, a spiral is a curve on a plane that winds around a fixed axis. Gray et al. teaches a glass tube that is a single piece of construction and has a tubular profile. In Fig. 1, the end collars (2) form a raised edge at the end of the glass tube. In essence, this glass tube is a tray that is curved into a tube. The predetermined arrangement of the glass tube can be horizontal, vertical, or somewhere in between.

16. Regarding claims 7 and 8, Gray et al. teaches that the pigment flakes are produced via plasma chemical vapor deposition techniques (column 1, lines 7 – 12).

17. Regarding claim 13, Gray et al. teaches that the flakes can have a nominal thickness ranging from 50 angstroms to 300 microns.

18. Regarding claim 14, Gray et al. discloses in a release layer that is provided to promote the removal of the pigmented film as flakes (column 7, lines 2- 3). In Fig. 2, the release layer (14) is deposited onto the substrate (13) (column 7, lines 4- 5). Gray et al.

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also teaches a method of depositing a  $\text{SiO}_2/\text{TiO}_2$  multilayer on the inside wall of a glass tube (column 4, lines 6 – 8). According to claims 3 and 4,  $\text{SiO}_2$  is a material having a low index of radiative reflectance and  $\text{TiO}_2$  is a material having a high index of radiative reflectance. In addition, Gray et al. teaches that elevating the temperature of the film/tube combination increases tensile forces (column 6, lines 59 – 61). If the combination of intrinsic and thermal stresses in the film is tensile and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate (column 6, lines 33 – 37). The flakes of film material can be swept through with nitrogen and collected by a downstream filter (column 4, lines 16 – 17).

19. Regarding claims 15 – 18, Gray et al. discloses  $\text{SiO}_2/\text{TiO}_2$  multilayers having alternating layers of high and low index of radiative reflectance material. As this compound is the same as that disclosed by applicants to have the claimed spectral reflectance profile and said profile is a result of the material properties of the composition, Gray et al.'s  $\text{SiO}_2/\text{TiO}_2$  multilayer inherently possesses the properties in claims 15 – 21.

20. In addition, the inherency of the features of claims 15 and 16 is evidence in paragraph 3, lines 6 – 15, where it is stated “these coatings may reflect radiative energy that would act to further raise the surface temperature of the component, while simultaneously permitting radiative energy generated by the component itself to pass through the coating to further reduce the temperature of the component”.

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21. Regarding claim 19, Gray et al. teaches that when the flakes are composed of multilayer films, with index of refraction changing from layer to layer, the spectral character of their reflectivity can be controlled (column 1, lines 32 – 36). The surface may appear red when viewed at normal incidence and blue when viewed at a different angle (column 1, lines 38 – 40). Thus, the presence of color suggests that the flakes have properties in the visible spectrum.

22. Regarding claim 20 and 21, Gray et al. teaches the application of the flakes onto glass beads to simulate pearl buttons (column 1, lines 41 – 45). The glass bead loses its translucent property and becomes opaque after the application of the flakes. In essence, these flakes act as a paint layer on a glass surface. In addition, the layer of paint improved the visibility of the glass bead. An opaque glass bead is easier to see than a translucent one.

***Claim Rejections - 35 USC § 103***

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.



4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

25. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gray et al. Gray et al. discloses a tray with a geometric profile of a tube, as noted above, but does not teach a plurality of trays comprising of a total surface area of at least 100,000 square inches. One skilled in the art would not use only one glass tube in production. Rather, multiple glass tubes would be used in order to produce the invention in mass quantities and in a cost effective manner. It would then be obvious to one skilled in the art at the time of invention to use multiple glass tubes that can have a surface area of more than 100,000 square inches. One would be motivated to do so with the expectation of higher production rates and lower operating costs.

26. Claims 1 and 9 -12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andes et al. (US 6,284,032) in view of Gray et al.

27. Regarding claim 1, Andes et al. teaches a multilayer interference pigment with alternating layers of metal oxides of low and high refractive index, but does not teach a heating cycle to release the combined layers from the surface and later collecting the combined layers (abstract). Gray et al., however, teaches that elevating the temperature of the film/tube combination increases tensile forces (column 6, lines 59 – 61). If the combination of intrinsic and thermal stresses in the film is tensile and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate (column 6, lines 33 – 37). The flakes of film material can be swept through with nitrogen and collected by a downstream filter. It would then be obvious to one skilled in the art at the time of invention to heat the film and substrate

to release the combined layers and later collecting the layers. One would be motivated to do so in order to apply the layers as a coating onto other parts used in high combustive gas atmospheres.

28. Regarding claim 9, Andes et al. teaches platelike titanium dioxide as the substrate. The substrate in this case is the surface. Thus, a titanium dioxide surface is comprised of a high temperature metal.

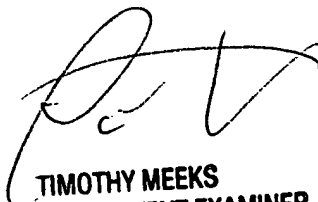
29. Regarding claim 10, Andes et al. teaches platelike titanium dioxide as the substrate. The substrate in this case is the surface. According to [www.Wikipedia.com](http://www.Wikipedia.com), salts can be clear and transparent (sodium chloride), opaque (titanium dioxide), and even metallic and lustrous (iron disulfide). Thus, titanium dioxide is a form of opaque salt, and a titanium dioxide surface is comprised of a salt.

30. Regarding claims 11 and 12, Andes et al. teaches a substrate formed from flakes of aluminum or gold (column 1, lines 27 – 28).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Thursday 8 - 5:30 and Friday 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**